CLAIMS

1. A novel human cell strain enabling the continuous production of a desired protein with high efficiency, comprising:

a novel human cell strain established by transforming a human cell strain whose total intracellular protein weight is 0.1 to 1 mg per 1,000,000 cells;

with said novel human cell strain being further characterized in that after a gene encoding a desired protein is transfected into it, the transfected cell is subsequently cultured.

2. The novel human cell strain of Claim 1, which is established from human myeloma-derived RPMI8226 cells.

3. The novel human cell strain of Claim 1, which is established from human myeloma-derived KMS-12BM cells.

4. The novel human cell strain of Claim 1, wherein said human cell strain is established by choosing, out of human cell strains with a total intracellular protein of on or about 0.1-1.0mg per 1,000,000 cells, cell clones which have a doubling time of 18 to 24 hours and which have a 90% rate of cloning by limiting dilution method; and mutating said cell clones with carcinogens; and selecting cells out of said mutated cells, which have a doubling time of 18 to 24 hours and a 90% rate of cloning by limiting dilution method.

5. The novel human cell strain of Claim 4, wherein said carcinogens are selected from the group consisting of nitrosoguanidine (MNNG), phorbol ester (PMA) and ethylmethane sulfonate (EMS).

6. The novel human cell strain of Claim 1,

wherein said novel human cell strain can continuously produce the desired protein with high efficiency by culturing a clone, which has been transfected with a gene encoding the desired protein and has expressed the desired protein, in synthesis minimal essential medium ERDF with or without growth factors.

7. A novel human cell strain, enabling the continuous production of a desired protein at a yield of 1 ng – 10 . g/day per 1,000,000 cells at least over a 2-month period, comprising:

a novel human cell strain established by transforming a specific human cell strain;

with said novel human cell strain being further characterized in that after a gene encoding a desired protein is transfected into it, the transfected cell is subsequently cultured in a serum free medium.

8. A method for selecting a novel human cell strain for producing a desired protein, comprising:

(a) selecting a human cell strain with a total intracellular protein of on or about 0.1 – 1 mg per 1,000,000 cell; and

(b) choosing, out of human cell strains with a total intracellular protein of on or about 0.1-1.0mg per 1,000,000 cells, cell clones which have a doubling time of 18 to 24 hours and which have a 90% rate of cloning by limiting dilution method; and mutating said cell clones with carcinogens; and selecting cells out of said mutated cells, which have a doubling time of 18 to 24 hours and a 90% rate of cloning by limiting dilution method, to be said novel human cell strain.

9. The method for selecting a novel human cell strain of Claim 8, wherein said carcinogens are selected from the group consisting of nitrosoguanidine (MNNG), phorbol ester(PMA) and ethylmethane sulfonate(EMS).

10. The method for selecting a novel human cell strain of Claim 8, wherein said novel human cell strain can be continuously produced with high efficiency by culturing the clone, which has been transfected with the gene encoding the desired protein and has expressed the desired protein, in synthesis minimal essential medium ERDF with or without growth factors.

11. A method for producing proteins, comprising the use of a novel human cell strain as in any of claims 1-7.

12. A method for producing proteins, comprising:

transfecting a gene encoding a desired protein into the novel human cell strain of Claim 1;

and culturing the transfected cells, to continuously produce the desired protein with high efficiency.

13. The method of Claim 12, wherein a vector containing a cytome galovirus-derived promoter and a gene encoding the desired protein, is employed to produce the desired protein.

14. The method of Claim 12, wherein a clone, for which the novel human cell strain has been transfected with a gene encoding a desired protein and which has expressed the desired protein, is cultured in synthesis minimal essential medium ERDF with or without growth factors.

15. The method for producing protein of Claim 14, whe rein said growth factors include insulin, transferrin, ethanolamine, and sodium selenite.

16. The method for producing protein of Claim 14, wherein a clone, for which the novel human cell strain has been transfected with a gene encoding a desired protein and which has expressed the desired protein, is cultured in a large-scale and high-density culture (10^7 to 10^8 / ml) with a serum-free medium.

17. A protein purifying method comprising:
using a novel human cell strain as in any of claims 1-7 to produce a protein; and purifying said protein, for which said human cell strain has been transfected with a gene encoding said protein.

18. The purifying method of Claim 17, further comprising producing a highly efficient and highly pure desired protein derived from the gene encoding said protein, by culturing a clone, which has been transfected with a gene encoding the desired protein and which has expressed the desired protein, in synthesis minimal essential medium ERDF with or without growth factors .

19. A pharmaceutical composition comprising the protein produced from the n ovel human cell strain of Claim 1, or a part thereof, a s well as physiologically acceptable carriers.

20. A novel human cell strain as in any of Claims 1 – 19 wherein said human cell strain is a protein producing cell strain named as SC-01MFP (Accession Number FERM BP-10077).

21. A novel human cell strain as in any of Claims 1 – 19 wherein said human cell strain is a protein producing cell strain named as SC-02MFP (Accession Number FERM BP-10078).